

REMARKS/ARGUMENTS

This application has been carefully considered in light of the Final Office Action mailed July 25, 2003. Claims 1-6 and 8-10 have been rejected under 35 U.S.C. 103(a) as being obvious and, therefore, unpatentable over the primary reference to Klausen, US patent 4,838,995, when considered in view of the teachings of the secondary reference to Korenev et al., US patent 4,249,703. The Examiner has indicated that claims 7 and 11-12 are rejected as being dependent from a rejected base claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The Examiner has relied upon the reference to Klausen as disclosing a feeding apparatus for cellulosic material which includes a screw having a peripheral flange and a housing with an opening wherein the screw shaft is journalled in bearings. The Examiner acknowledged that Klauson does not disclose an adjustable opening such as disclosed with the present invention. In this respect, the Examiner states that it would be obvious for one of ordinary skill in the art to combine the teachings of Korenev with the reference to Klauson to provide for an adjustable plug pipe outlet at the discharge end of the screw.

Applicant respectfully disagrees with the Examiners position with respect to the combining of the teachings of the reference to Korenev et al. with the structure shown in Klauson to anticipate applicant's invention.

The primary reference to Klauson is directed to a process for bleaching cellulose pulp and to de-watering the pulp by passing the pulp through a screw press. In the screw press, water is removed from the pulp at spaced zones along the length of the screw. As the structure in Klauson is specifically designed to de-water the cellulosic material, the housing surrounding the screw includes a screen mantle including a plurality of screen pipes which allow moisture to pass therethrough. With such an open structure, any steam which would enter into the area of the screw would be dissipated through the screen together with liquid which is being removed from the cellulosic material. Such structure could not be used to accomplish the objectives for which the feeding apparatus of the present invention is designed.

More specifically, as set forth in the present application, the present invention is designed to prevent the loss of steam pressure by providing a discharge structure including a screw

mounted within a sealed housing wherein the screw housing has an adjustable outlet member to insure that the cellulosic material forms a plug which prevents the loss of pressure within the feeding apparatus. The formation of a plug of material to prevent loss of pressure and to prevent loss of steam energy is not suggested nor disclosed in the primary reference to Klauson. Also, the structure of Klauson could not be used for such purpose.

Further, it is respectfully submitted that the reference to Korenev et al. is non-analogous art. More specifically, the reference to Korenev et al. discloses an apparatus for mechanically and chemically destroying polysaccharides which includes a screw conveyor mounted within a housing. A plurality of mechanical blades shown mounted at 12 are mounted within a chamber 10 of the housing. The blades are designed so as to grind a material composed of peat which has been mixed with concentrated sulphuric acid. Depending upon the moisture content of the material being ground in order to destroy the polysaccharides, the residence time within the working zone or chamber 10 may be varied by regulating an axially displaceable nozzle which adjusts a radially discharged space shown at 7. The purpose of the adjustment of the nozzle 8 in the cited reference

is to regulate residence time of the material being treated and ground within the working zone 10. There is no description of providing for a device which could form an effective pressure tight plug of cellulosic material in order to prevent the loss of pressure within the working chamber and to prevent the escape of steam energy therefrom, as is the case with the present invention.

In Korenev, the head 4 is defined by two truncated cones which provide for increased mechanical shearing action on the material being treated. The final destruction of polysaccharides takes place between the second cone 6 and the nozzle 8 as described at column 4, lines 14 through 18, of the reference. In the present invention, this is the general area where a buildup of a pressure type material plug occurs due to the provision of the flange and the adjustable throttling element. In Korenev, however, this radial working space 7, downstream from the working chamber 10, remains generally constant since it is not for building up a plug material but for grinding the material. Again, adjustment of the nozzle 8 is only for purposes of controlling residence time due to different moisture levels in the starting materials. See column 4, line 57-62, column 5, lines 47-50 and column 7, lines 25-33.

As the reference to Korenev et al. is specifically designed to adjust a residence time of a peat material in order that the peat can be ground and mixed sufficiently to destroy polysaccharides, it is respectfully submitted that one of ordinary skill in the de-watering of cellulosic material would not look to the structure of Korenev et al. to alter or modify the de-watering screw apparatus of Klauson. In Klauson, the de-watering is accomplished in progressive steps and there is no suggestion of requiring a working chamber wherein a material is ground as is taught in the reference to Korenev et al.

It is believed improper to merely select a portion of a reference to Koreneve, that is the adjustable nozzle, without looking to the remaining structure of Korenev et al. and the reason why Korenev et al. utilizes the adjustable nozzle. Again, Korenev et al. requires a structure which allows a variance in grinding time depending upon the moisture of a material to be mechanically and chemically treated. See the discussion in the paragraph beginning at line 20 of column 7 of the reference to Korenev et al.

On the other hand, the reference to Klauson requires no such chamber for grinding and mixing of a cellulosic material.

Rather, Klauson merely discloses a series of de-watering and compression steps. Therefore, it is respectfully submitted that there is no suggestion in either of the primary or secondary references which would support the combination suggested.

In the Final Office Action the Examiner commented that the claims as amended with applicant's response to the Initial Office Action did not recite a limitation with respect to the discharge end of the chamber being sealed by material moving therethrough. Further, the Examiner stated that the Klauson reference makes a pressure tight seal because of the tapered screw.

As previously discussed, the reference to Klauson does not provide for a pressure tight chamber. Rather, Klauson is directed to a chamber within allows moisture to be discharged therethrough as the cellulosic material is being pressed. there is no suggestion that a pressure tight chamber is provided nor is there any teaching of a need to prevent a loss of steam energy, as is the case with the present invention. Klauson speaks of forming a plug of material but does not otherwise suggest that such plug is formed in such a manner to prevent the loss of pressure and steam energy, as is the case with the present invention.

Klauson teaches a process for bleaching cellulose pulp in a screw press which also de-waters the pulp in a series of de-watering zones 47 and 48. A pulp slush is introduced into the first de-watering zone so that the concentration of pulp rises to between 20 and 40% whereupon bleach chemicals are introduced to the pulp. Thereafter, the pulp is de-watered again to a discharge pulp concentration of approximately 15 to 50% pulp. Such a pulp slush composition comprising at the most approximately 50% pulp cannot provide for a buildup of a material which would prevent a loss of pressure or the loss of steam energy, as is taught by the present invention.

Due to the Examiner's comments, however, further amendment has been made to claim 1 to emphasize that the feeding apparatus housing is designed to prevent the loss of steam pressure as material is being discharged into the feeding apparatus from a steam separator. Claim 1 also recites means for adjusting the throttle means relative to the flange portion of the screw so as to adjust the size of the outlet opening to thereby form the cellulosic material into a pressure tight material plug. This means plus function element which provides for the unique sealing process of the invention is not disclosed nor suggested by the prior art reference to Klauson nor the secondary reference to

Appl. No. 09/666,326
Amndt. dated November 25, 2003
Reply to Office Action of July 25, 2003

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As the prior art references do not recognize the utility which the present feeding apparatus provides and as the combination suggested by the Examiner is believed to be incorrect for the reasons set forth above, reconsideration of the grounds for rejection is respectfully solicited and allowance of the amended claims is requested.

As this response is being filed after the shortened statutory period, a separate request for extension of time is submitted herewith.

Respectfully submitted,

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Date: November 25, 2003

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